

Cement hollow blocks (CHB) and Cement grills



Figure (3): Applying surface-bonding cement to a dry-stacked, concrete block wall

Proportioning of concrete for the manufacture of CHBs

This is done in two different ways by weight or volume. The most common method is by volume (e.g. using a bucket).

Mixture for CHBs: Mix Proportion 1:7, as per structural engineer's specification. Slump test shall not exceed 10cm, unless specified by a structural engineer.

Common CHB mix: $\frac{1}{2}$ bucket water, 1 bucket cement, and 7 buckets sand.

Common mortar mix: 1 bucket water, 1 bucket cement, and 3 buckets sand

Curing After being removed from the mold, the CHBs should be covered with a plastic sheet for at least 7 days in order to effectively cure. This can be achieved by continually spraying them with water or keeping them

under water in tanks. This leads to less cracking and a stronger, harder, denser and more durable concrete.

Storage: Store CHBs for at least 14 days after curing before using them. Protect them from rain and ground water.

Maintenance: Consider plastering the surface of CHB walls in order to avoid excess absorption of moisture into the wall and to facilitate periodic cleaning.

Mortar and Grout

- a) Mortar - used to bond masonry products together. Composed of Portland cement, sand, lime and water. Conforms to ASTM C270, Types M and S are used for exterior use, Types S or N used for interior load-bearing walls. Type O used for non-load-bearing interior walls.
- b) Grout - similar to mortar, except used as a filler, especially for vertically-reinforced walls. Specified as either fine-grained or coarse-grained.

Typical applications of cement hollow blocks in humanitarian shelter projects

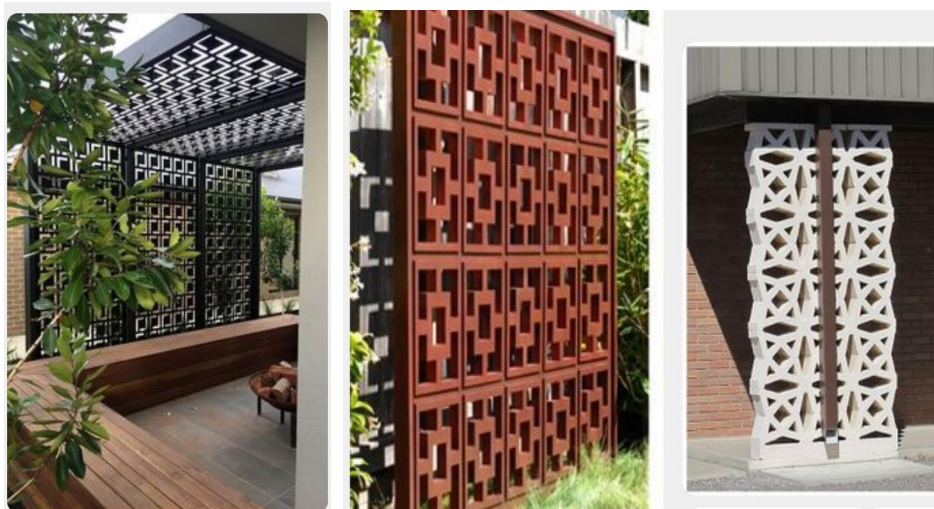
- 1) As non-load bearing infill between reinforced concrete columns and beams (frames). CHBs are installed between reinforced concrete columns up to the window sill level, and then lightweight walling materials such as timber framing clad with plywood or bamboo are installed above, as shown in Figure (4).
- 2) As load bearing infill between reinforced concrete columns and beams in confined masonry buildings. The CHBs are reinforced with vertical and horizontal steel bars connected to the reinforced concrete columns and beams, increasing their resistance to lateral loads.



Figure (4): Concrete blocks have been installed between the reinforced concrete columns, up to the level of the window sill

Cement grills

Other types of Concrete masonry unit (CMU) are cement grills which are used for interior or exterior decoration, they are available in different shapes and colors ,as shown in Fig.(5).



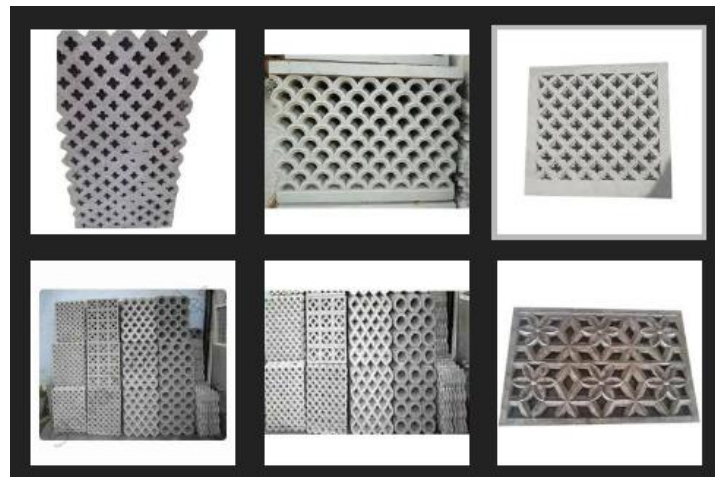


Fig. (5) :Some types of Cement grills